



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/601,597	06/24/2003	Young Ho Park	2336-181	1487

7590 12/07/2004
LOWE HAUPTMAN GOPSTEIN GILMAN & BERNER, LLP
Suite 310
1700 Diagonal Road
Alexandria, VA 22314

EXAMINER

LEWIS, MONICA

ART UNIT PAPER NUMBER

2822

DATE MAILED: 12/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/601,597

Applicant(s)

PARK ET AL.

Examiner

Monica Lewis

Art Unit

2822

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 September 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) 7-17 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 June 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. This office action is in response to the election filed September 27, 2004.

Election/Restrictions

2. Applicant's election with traverse of Group I is acknowledged. The traversal is on the ground(s) that the Examiner has failed to demonstrate why the product made...can be regarded as being materially different from the claimed product. This is not found persuasive because searching in a separate area for method (Class 438) and another area for apparatus (Class 257) for two inventions does constitute an undue burden upon the examiner.

The requirement is still deemed proper and is therefore made FINAL.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-4 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miura et al. (U.S. Patent No. 5,665,986) in view of Keizo et al. (Japanese Patent No. 2001-339100).

In regards to claim 1, Miura et al. ("Miura") discloses the following:

- a) a first conductive GaN clad layer (5) with an upper surface provided with a first contact (6) formed thereon (For Example: See Figure 1);
- b) an active layer (4) formed on a lower surface of the first conductive GaN clad layer (For Example: See Figure 1);
- c) a second conductive GaN clad layer (3) formed on a lower surface of the active layer (For Example: See Figure 1);

Art Unit: 2822

d) a conductive substrate (1) with a lower surface provided with a second contact (7) formed thereon, formed on a lower surface of the conductive adhesive layer (For Example: See Figure 1).

In regards to claim 1, Miura fails to disclose the following:

a) a conductive adhesive layer

However, Keizo et al. ("Keizo") discloses the use of a conductive adhesive layer (3) (For Example: See Figure 1). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor of Miura to include the use of a conductive adhesive layer as disclosed in Keizo because it aids in providing good optical effectiveness (For Example: See Paragraph 9).

Additionally, since Miura and Keizo are both from the same field of endeavor, the purpose disclosed by Keizo would have been recognized in the pertinent art of Miura.

In regards to claim 2, Miura fails to disclose the following:

a) a reflective layer made of a conductive material and formed between the second clad layer and the conductive adhesive layer.

However, Keizo discloses the use of a reflective layer (32) made of a conductive material and formed between the clad layer (41) and the conductive adhesive layer (32) (For Example: See Figure 8). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor of Miura to include the use of reflective layer made of a conductive material and formed between the second clad layer and the conductive adhesive layer as disclosed in Keizo because it aids in providing good optical effectiveness (For Example: See Paragraph 9).

Additionally, since Miura and Keizo are both from the same field of endeavor, the purpose disclosed by Keizo would have been recognized in the pertinent art of Miura.

Art Unit: 2822

In regards to claim 3, Miura fails to disclose the following:

a) the reflective layer is made of a material selected from the group consisting of Au, Ni, Ag, Al and their alloys.

However, Keizo discloses the use of a reflective layer made of a material selected from the group consisting of Au, Ni, Ag, Al and their alloys (For Example: See Figure 8 and Figure 9). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor of Miura to include the use of reflective layer made of a material selected from the group consisting of Au, Ni, Ag, Al and their alloys as disclosed in Keizo because it aids in providing good optical effectiveness (For Example: See Paragraph 9).

Additionally, since Miura and Keizo are both from the same field of endeavor, the purpose disclosed by Keizo would have been recognized in the pertinent art of Miura.

In regards to claim 4, Miura discloses the following:

a) the conductive substrate is made of a material selected from the group consisting of silicon (Si), germanium (Ge) and GaAs (For Example: See Abstract).

In regards to claim 6, Miura discloses the following:

a) the first conductive GaN clad layer is a GaN crystalline layer doped with an n-type impurity, and the second conductive GaN clad layer is a GaN crystalline layer doped with a p-type impurity (For Example: Column 6 Lines 22-37).

5. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miura et al. (U.S. Patent No. 5,665,986) in view of Keizo et al. (Japanese Patent No. 2001-339100).

In regards to claim 5, Miura fails to disclose the following:

a) the conductive adhesive layer is made of a material selected from the group consisting of Au-Sn, Sn, In, Au-Ag and Pb-Sn.

However, Ishida discloses the use of a conductive adhesive layer made of Pb-Sn (For Example: See Paragraph 38). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor of Miura to include the use of a conductive adhesive layer made of Pb-Sn as disclosed in Ishida because it aids in providing electrical connection (For Example: See Paragraph 40).

Additionally, since Miura and Ishida are both from the same field of endeavor, the purpose disclosed by Ishida would have been recognized in the pertinent art of Miura.

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Monica Lewis whose telephone number is 571-272-1838. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amir Zarabian can be reached on 571-272-1852. The fax phone number for the organization where this application or proceeding is assigned is 703-308-7722 for regular and after final communications. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956

ML
December 1, 2004



Mary Wilczewski
Primary Examiner